IN THE CLAIMS:

1. (currently amended) A method for delivering nucleic acid to cells in a tissue of interest, comprising:

contacting the tissue with an agent which increases vascular permeability ~~of~~ to an exogenous nucleic acid; and

administering to the tissue the exogenous nucleic acid ~~to the tissue~~ under an effective amount of low ~~at a~~ calcium ion concentration of less than or equal to 500 micromolar, whereby transfer efficiency of the exogenous nucleic acid by the cells in the tissue is increased.

2-4. (cancelled)

5. (currently amended) A method for delivering an exogenous nucleic acid to cells of a tissue of interest, comprising:

contacting the tissue with a vascular permeability increasing agent under ~~conditions~~ an effective amount of low calcium ion concentration of less than or equal to 500 micromolar ~~calcium~~ to increase vascular permeability to an exogenous nucleic acid; and

administering the exogenous nucleic acid to the tissue, whereby transfer efficiency of the exogenous nucleic acid to the cells of the tissue of interest is increased.

6-26. (cancelled)

27. (currently amended) A method for delivering a nucleic acid to malignant cells in a tissue, comprising:

treating the tissue with a vascular permeability increasing agent to increase delivery of an exogenous nucleic acid to the malignant cells in the tissue; and

administering to the tissue the exogenous nucleic acid ~~to the tissue~~ under ~~conditions of~~ an effective amount of low calcium ion concentration of less than or equal to 500 micromolar ~~calcium~~.

28-36. (cancelled)

37. (currently amended) A method of providing~~,~~ to a recipient subject~~,~~ donor cells that comprise nucleic acid exogenous to the cells, comprising:

contacting a tissue comprising the donor cells with an agent that increases vascular permeability to increase transfer efficiency of an exogenous nucleic acid to the donor cells;

administering ~~nucleic acid~~ to the tissue comprising the donor cells nucleic acid under an effective amount of low calcium ion concentration ~~conditions~~ of less than or equal to 500

micromolar ~~calcium~~; and

introducing the donor cells into the recipient subject to express a gene product encoded by the nucleic acid.

38. (original) The method of claim 37 wherein an organ comprising the donor cells is transplanted into the recipient subject.

39. (original) The method of claim 37 wherein the donor cells are swine cells or primate cells.

40-46. (cancelled)

47. (previously presented) A pharmaceutical kit comprising:

a permeability agent that can increase vascular permeability to a nucleic acid in a subject;

a solution having a calcium ion concentration of from about 40 μmol/L to about 500 μmol/L; and

a nucleic acid for administration to a subject.

48-51. (cancelled)

52. (previously presented)A treatment solution which has a calcium ion concentration of from about 40 μmol/L to about 500 μmol/L, comprising:

a) a permeability agent that can increases vascular permeability to a nucleic acid; and

b) a nucleic acid.

53-54. (cancelled)

55. (previously presented) A treatment solution comprising a nucleic acid in a fluid carrier and having a calcium ion concentration of from about 40 μmol/L to about 500 μmol/L.

56-60. (cancelled)

61. (currently amended) A method for delivering nucleic acid to cells in tissue of interest, comprising administering to the cells an exogenous nucleic acid under an effective amount of low ~~a~~ calcium ion concentration of about 500 μmol/L or less.

62. (previously presented) The method of claim 61 wherein the nucleic acid is administered to the cells under a calcium ion concentration of from about 40 μmol/L to about 500 μmol/L.

63. (previously presented) The method of claim 61 wherein the nucleic acid is administered by perfusion.

64. (previously presented) The method of claim 61 wherein a perfusate of nucleic acid is recirculated and then readministered to the cells.

65. (previously presented) The method of claim 61 wherein a fluid having a calcium ion concentration of from about 40 μmol/L to about 500 μmol/L is used as a perfusate of the tissue.

66. (previously presented) The method of claim 61 wherein the cells are in a solid cell mass.

67. (previously presented) The method of claim 61 wherein the cells are in a solid organ.

68. (previously presented) The method of claim 61 wherein the cells are of an organ selected from the group consisting of heart, lung, kidney, testes, ovaries, skeletal muscle, kidneys, brain or spleen.

69. (previously presented) The method of claim 61 wherein the tissue is cardiac tissue.

70. (previously presented) The method of claim 61 wherein the tissue comprises malignant cells.

71. (previously presented) The method of claim 61 wherein the cells are in a solid tumor.

72. (previously presented) The method of claim 61 wherein the tissue is mammalian.

73. (previously presented) The method of claim 61 wherein the nucleic acid is administered ex vivo.

74. (previously presented) The method of claim 61 wherein the nucleic acid is administered in vivo.

75. (previously presented) The method of claim 61 wherein the nucleic acid is administered to livestock, poultry, dog or cat.

76. (previously presented) The method of claim 1 wherein the agent is VEGF.

77. (previously presented) The method of claim 1 wherein the agent is bradykinin.

78. (previously presented) The method of claim 1 wherein the agent is serotonin.

79. (previously presented) The method of claim 1 wherein the agent is histamine.

80. (previously presented) The method of claim 5 wherein the agent is VEGF.

81. (previously presented) The method of claim 5 wherein the agent is bradykinin.

82. (previously presented) The method of claim 5 wherein the agent is serotonin.

83. (previously presented) The method of claim 5 wherein the agent is histamine.

84. (previously presented) The method of claim 27 wherein the agent is VEGF.

85. (previously presented) The method of claim 27 wherein the agent is bradykinin.

86. (previously presented) The method of claim 27 wherein the agent is serotonin.

87. (previously presented) The method of claim 27 wherein the agent is histamine.

88. (previously presented) The method of claim 37 wherein the agent is VEGF.

89. (previously presented) The method of claim 37 wherein the agent is bradykinin.

90. (previously presented) The method of claim 37 wherein the agent is serotonin.

91. (previously presented) The method of claim 37 wherein the agent is histamine.

92. (currently amended) The ~~method~~ pharmaceutical kit of claim 47 wherein the agent is VEGF.

93. (currently amended) The ~~method~~ pharmaceutical kit of claim 47 wherein the agent is bradykinin.

94. (currently amended) The ~~method~~ pharmaceutical kit of claim 47 wherein the agent is serotonin.

95. (currently amended) The ~~method~~ pharmaceutical kit of claim 47 wherein the agent is histamine.

96. (currently amended) The ~~method~~ treatment solution of claim 52 wherein the agent is VEGF.

97. (currently amended) The ~~method~~ treatment solution of claim 52 wherein the agent is bradykinin.

98. (currently amended) The ~~method~~ treatment solution of claim 52 wherein the agent is serotonin.

99. (currently amended) The ~~method~~ treatment solution of claim 52 wherein the agent is histamine.

100. (previously presented) The method of claim 1 wherein the nucleic acid encodes an angiogenic growth factor.

101. (previously presented) The method of claim 1 wherein the nucleic acid encodes an ion channel subunit.

102. (previously presented) The method of claim 1 wherein the nucleic acid encodes an anti-angiogenic agent.

103. (previously presented) The method of claim 5 wherein the nucleic acid encodes an angiogenic growth factor.

104. (previously presented) The method of claim 5 wherein the nucleic acid encodes an ion channel subunit.

105. (previously presented) The method of claim 5 wherein the nucleic acid encodes an anti-angiogenic agent.

106. (previously presented) The method of claim 27 wherein the nucleic acid encodes an angiogenic growth factor.

107. (previously presented) The method of claim 27 wherein the nucleic acid encodes an ion channel subunit.

108. (previously presented) The method of claim 27 wherein the nucleic acid encodes an anti-angiogenic agent.

109. (previously presented) The method of claim 37 wherein the nucleic acid encodes an angiogenic growth factor.

110. (previously presented) The method of claim 37 wherein the nucleic acid encodes an ion channel subunit.

111. (previously presented) The method of claim 37 wherein the nucleic acid encodes an anti-angiogenic agent.

112. (currently amended) The ~~method~~ pharmaceutical kit of claim 47 wherein the nucleic acid encodes an angiogenic growth factor.

113. (currently amended) The ~~method~~ pharmaceutical kit of claim 47 wherein the nucleic acid encodes an ion channel subunit.

114. (currently amended) The ~~method~~ pharmaceutical kit of claim 47 wherein the nucleic acid encodes an anti-angiogenic agent.

115. (currently amended) The ~~method~~ treatment solution of claim 52 wherein the nucleic acid encodes an angiogenic growth factor.

116. (currently amended) The ~~method~~ treatment solution of claim 52 wherein the nucleic acid encodes an ion channel subunit.

117. (currently amended) The ~~method~~ treatment solution of claim 52 wherein the nucleic acid encodes an anti-angiogenic agent.